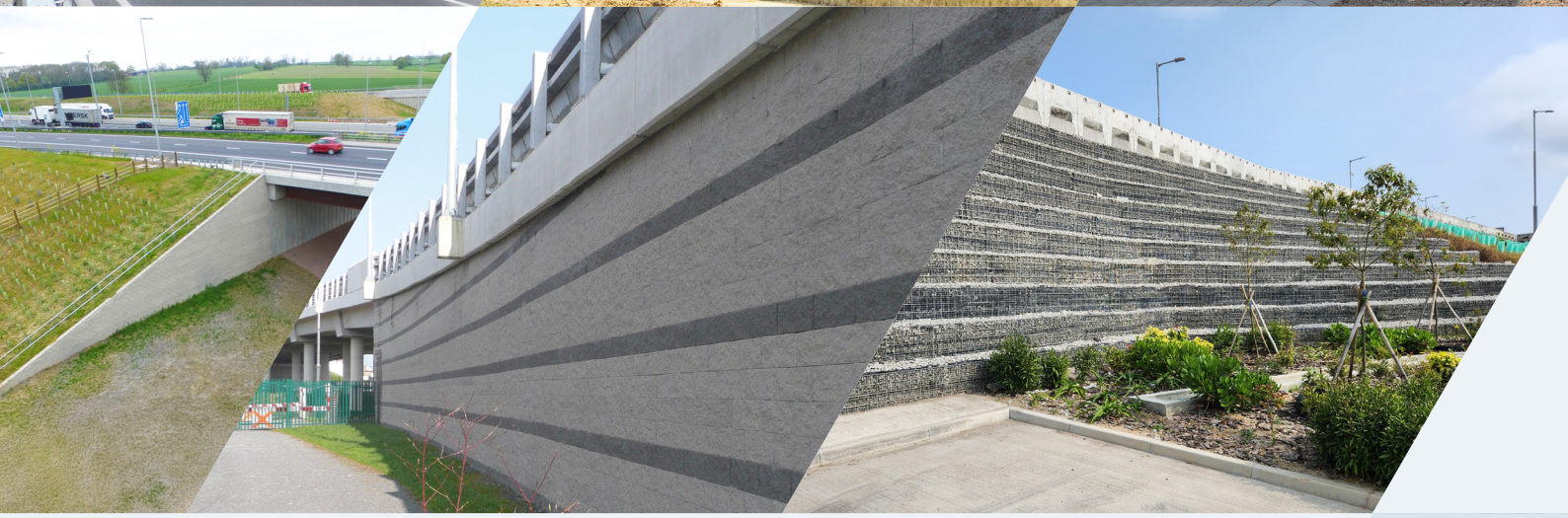
TENSAR® WALL & SLOPE SYSTEMS

Reinforced Soil Retaining Walls & Slopes



PROVEN
Technology

PROVEN
Savings

PROVEN
Success

Tensar®
A Division of CMC

TENSAR® WALL & SLOPE SYSTEMS

Why use Tensar® reinforced soil structures?

Benefits

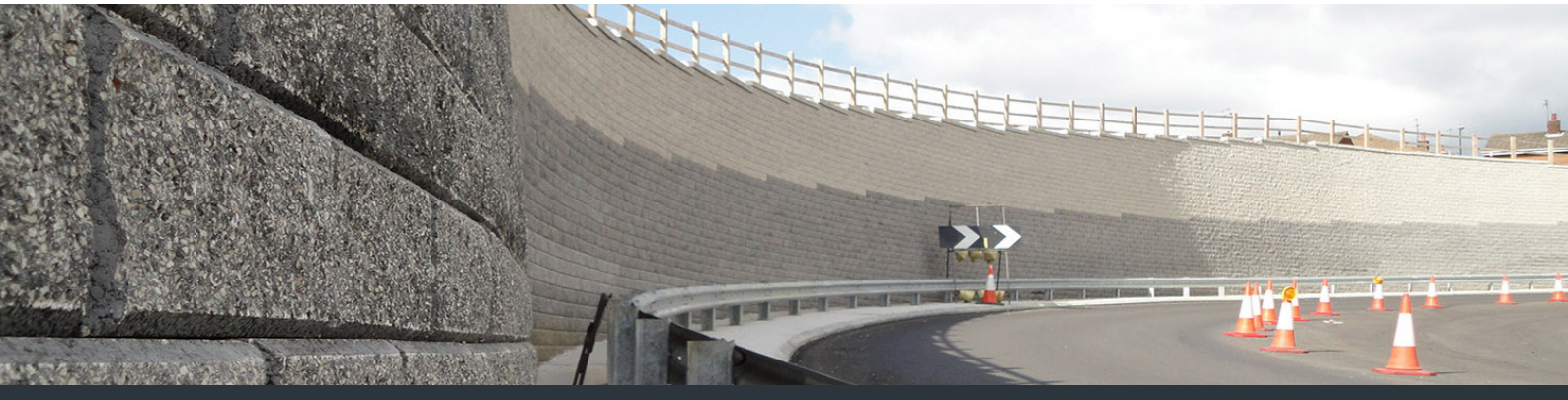
- **Global Approval and Certifications**
  BBA HAPAS (United Kingdom)
  GEO Guide (Hong Kong)
  RMAL (Malaysia)
  MyHijau (Malaysia)
  ABCi (Brunei)
- **Full Design Service**
- **Use of site won or waste fill materials**
- **Service life of up to 120 years**
- **Rapid construction possible**
- **Reduced carbon emissions on-site**
- **Range of systems and finishes**
- **Environmental Product Declaration** (EPD) for RE500 geogrids certifies whole-life environmental impacts

Time Savings

Cost Savings

Carbon Savings

Positive Community Impact



TENSAR® WALL & SLOPE SYSTEMS

Advantages of Tensar® uniaxial (RE500) geogrid

- Manufactured from punched and drawn high density polyethylene (HDPE) sheet.
- Long, narrow apertures and high integral junctions allow effective interlock with fill material, and provides superior load transfer from soil to geogrid.
- Custom-made polymer connector to achieve high strength connection between geogrid and facing.

- Not susceptible to hydrolysis and are resistant to aqueous solutions of salts, acids, and alkalis (pH 2.0 to 12.5), making them a perfect geogrid that can be inserted during concrete panel casting without any compromising on long-term durability considering the alkaline environment associated with concrete.
- >160,000 hours of long term creep testing under controlled temperatures up to 50°C confirming suitability for design life of 120 years under a wide range of environmental conditions.
- Rigorously tested for soil-geogrid interaction.
- Superior resistance to weathering including exposure to ultraviolet light.
- Installation damage testing using crushed aggregates with 125 mm maximum particle size.
- Produce code compliant designs for reinforced soil walls, slopes and bridge abutments using TensarSoil® software.

Request TensarSoil® Software >

TENSAR® WALL & SLOPE SYSTEMS

Reinforced Soil Structures Applications

PERMANENT REINFORCED SOIL STRUCTURES

Retaining walls support a mass of earth to form a vertical or near-vertical face. They may be required on a sloping site to create terraces, to support elevated roads, railways and bridge decks, or to relieve lateral earth pressure from adjacent structures. Reinforced soil retaining walls are increasingly adopted as low cost and environmentally attractive retaining wall solutions. They are durable and robust but also flexible in design, able to accommodate moderate ground movements during and after construction.

Tensar offers a range of reinforced soil retaining wall systems with design lives of up to 120 years. They have low environmental impact, and are quick and easy to build – cutting construction costs by up to 75% and halving build times compared with other retaining wall solutions. A variety of durable facing options are available.

TEMPORARY REINFORCED SOIL STRUCTURES

Temporary retaining walls are often required to support embankments during staged construction, for temporary road and rail crossings, or to support crane platforms. Driven or sheet pile systems may have been the preferred option for many years, but reinforced soil wall systems are now often adopted for their speed of construction and lower cost, without the need for cranes or piling rigs.

Tensar's temporary retaining wall systems are simple and quick to construct, requiring no heavy lifting equipment, and usually no special foundation treatment. They offer durable, low cost solutions for staged embankment construction, temporary bridge abutments, and support for haul roads and crane platforms.

STEEP SLOPES

The stability of a slope is dependent upon the soil type and strength, the presence of water within or behind the slope, and any surcharge loading. These factors define the safe slope geometry. Slope stability can be increased by incorporating geogrid soil reinforcement. This allows steepening of the slope face without compromising stability.

Tensar's slope reinforcement systems offer proven long-term design stability. Their simple construction reduces cost and build times. They can use site-won or recycled materials for structural fill and often require no special foundation treatment. Attractive 'green' facing options are normally adopted, using selected planting to suit local conditions. Aesthetics can be further enhanced by the use of curved geometry, easily formed using Tensar systems.

BRIDGE ABUTMENTS AND WING WALLS

Bridge abutments and wing walls can be straight forward earth retaining structures supporting the embankment fill only, with vertical bridge loading carried separately on columns and piles. Alternatively, it has become increasingly common to place the bank seat directly on the reinforced soil abutment structure, which supports all the superimposed bridge loading.

Tensar's retaining wall systems have proven to be efficient and cost effective for bridge abutment structures. Tensar have developed design solutions suitable for simply supported, semi-integral, and fully integral bridge decks - where all vertical and lateral loads from the bridge deck are transferred to the bank seat supported directly on the reinforced soil abutment.

TENSAR® WALL & SLOPE SYSTEMS

Rail, Roads and Highways Reinforced Soil Solutions

Rail Solutions

Almost all rail projects involve the construction of retaining walls, road and rail embankments, bridge abutments, and other features.

Tensar has a range of **TensarTech®** Reinforced Soil Systems for retaining walls, steep embankments and bridge abutments. These solutions have been used globally for many years and offer major cost and construction programme advantages over alternative methods. They also enable use of recycled or site-won fill materials to keep down costs and minimise local and environmental impact.

Learn more >

Road Solutions

Reinforced soil structures have become a standard construction approach for earth retaining walls and bridge abutments on highway projects.

Tensar has a range of **TensarTech®** Reinforced Soil Systems for retaining walls, steep embankments and bridge abutments. These roads and highways structures have been used extensively across the world and offer major cost and construction programme advantages over alternative methods. They also enable use of recycled or site-won fill materials to further reduce costs and minimise local and environmental impact.

Learn more >

Soil Retaining Wall & Slope Systems

TENSARTECH® TW1 WALL SYSTEM

TensarSoil Standard Facings: TW1 and TW1 ME

This attractive and versatile system is BBA HAPAS certified for use as earth retaining walls and bridge abutments for up to 120 years design life. The system comprises a modular block facing with Tensar geogrid soil reinforcement and high strength connectors. The pre-cast concrete blocks are available in several colours, with the option of a textured (split) finish. A 'link' version is available that enables a natural stone or brick façade to be connected in-situ. The dry laid blocks interlock to provide stability and aid alignment, and to lock-in the geogrid connectors. The factory produced blocks are manufactured to a close dimensional tolerance that produces a nominal finished wall face angle of 86°.

Learn more >

TENSARTECH® KEYSTONE® TW3 WALL SYSTEM

TensarSoil Standard Facings: TW3 and Keystone® TW3

Another attractive wall solution. The system comprises modular block facing with Tensar geogrid reinforcement, high strength connectors, and GRP alignment dowels. The high-tolerance factory made concrete blocks are 200mm high. Successive courses are dry-laid and connected by dowel pins to produce a near vertical finished wall face angle of 89.6° (1:128). BBA HAPAS certified for use as earth retaining walls and bridge abutments for up to 120 year design life.

The pre-cast concrete blocks are available in several colours, with the option of a textured (split) finish.

Learn more >

DISCLAIMER: *Not all facing options are available in all markets.*

Soil Retaining Wall & Slope Systems

TENSARTECH® TR2 SYSTEM
TensarSoil Standard Facing: Steel Mesh Panel (SMP)

The TensarTech® TR2 System is mainly suited to temporary structures where practicality and economy are more important than aesthetics. Designed principally for contractor's temporary works situations, these simple to build, low cost structures have also been successfully adapted as permanent thrust relief structures.

Learn more >

TENSARTECH® ECOCRIB™
TensarSoil Standard Facing: Ecocrib

TensarTech® EcoCrib™ goes beyond traditional crib wall solutions, offering a range of benefits that simplify your project and ensure long-lasting performance. EcoCrib™ boasts lightweight interlocking components that enable a quick and easy on-site assembly process. This reduces construction time and labour costs compared to conventional crib wall materials. Unlike timber crib walls susceptible to rot and degradation, EcoCrib™ is also built to last, boasting a design life expectancy of up to 120 years.

Learn more >

TENSARTECH® ROCKWALL® SYSTEM
TensarSoil Standard Facing: Gabion

The TensarTech® RockWall® system has the appearance of a traditional rock filled gabion structure. However as it requires less imported rock fill, it offers lower cost and faster construction. The system comprises pre-fabricated Galfan® coated, welded steel mesh facing units, Tensar® geogrid reinforcement, and polymer bodkins for a high strength joint between geogrid and steel units. The finished face angle can be varied from 70° to 84°. Selected rock fill can be used to create an attractive architectural finish.

Learn more >

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Soil Retaining Wall & Slope Systems

TENSARTECH® NATURALGREEN® SYSTEM

TensarSoil Standard Facing: Low Angle Slope

The TensarTech® NaturalGreen® is a versatile solution for the construction of stable steepened slopes with a face angle up to 45° and natural vegetation. Typically used to reduce the footprint of earth embankments by steepening the side slope, or for the reinstatement of failed soil slopes, the system has no engineered facing.

Tensar geogrid reinforcement is used to provide internal slope stability, while an erosion mat may be incorporated to protect the soil face while vegetation establishes. Construction is essentially an earthworks operation with no specialist skills needed.

Learn more >

TENSARTECH® GREENSLOPE SYSTEM

TensarSoil Standard Facing: Steel Mesh Unit (SMFU)

The TensarTech® GreenSlope system allows construction of steep vegetated slopes with a face angle up to 70°. The system comprises durable welded steel mesh facing units, Tensar geogrid reinforcement, polymer bodkin connectors, plus an erosion protection liner.

Site-won or recycled material can be used as structural fill, with a topsoil layer encapsulated at the face. Vegetation cover is chosen to suit the site location and slope orientation to create an attractive natural looking structure that will enhance the local environment.

Learn more >

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Soil Retaining Wall & Slope Systems

TENSARTECH® ARES WALL SYSTEM

TensarSoil Standard Facings: Concrete Panel Facing and ARES Retaining Wall System

The TensarTech® ARES wall system is comprised of a pre-cast concrete modular panel facing cast with Tensar® geogrid tabs embedded in the rear face for connection to Tensar® uniaxial (RE500) geogrids. A full-strength connection can be achieved between the geogrids and precast concrete facing panels using a polymeric bodkin without the concern of corrosion.

Learn more >

SIERRASCAPE® RETAINING WALL SYSTEM

TensarSoil Standard Facing: Steel Mesh Unit (SMFU)

The Sierrascape® system combines galvanised proprietary wire-formed baskets with Tensar® uniaxial (RE500) geogrid for a dependable, mechanical connection that better withstands differential settlement, seismic events, and heavy external loads. The components can be stacked easily to create an uniform wall face. It provides a versatile facing option to suit the project aesthetic needs using veneer treated stacked stone, shotcrete-sculpted face or vegetated surface.

Learn more >

DISCLAIMER: *Not all facing options are available in all markets.*

TENSAR® WALL & SLOPE SYSTEMS

Soil Retaining Wall & Slope Success Stories

Tensar® have been involved in thousands of walls and slopes projects across the globe, helping engineers, contractors and owners to deliver successful projects which have saved time, cost and carbon on site.

See projects >

Save time, cost and carbon and have a more positive impact on the Community with Tensar®

A partner beside you every step of the way.

A project is about more than a simple product choice – it's about a design that meets the owner's needs, lowers costs, improves design life, and protects your reputation. In other words, it's about the total value you receive from a partner committed to making your project a success.

Tensar® is an industry leader in Reinforced Soil Structures. We can provide project specific advice, full engineering and construction support, including design, construction drawings, and site assistance, for our TensarTech® Systems.

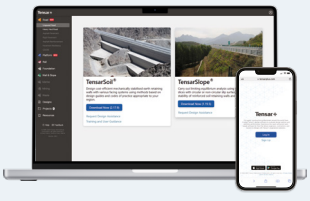
If you are looking for a free design assessment on your next project then just submit the details here and we will get in touch. Alternatively, contact us by visiting our website:

Design support > tensarinternational.com >

Free CPD Seminars are available from our team covering **Tensar® Wall & Slope Systems** or other topics.

Request an in-house seminar >

Tensar® Walls & Slopes Design **Now available on Tensar**



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